DISCUSSION PAPER

FRAMEWORK FOR ADDRESSING ECONOMIC BENEFITS OF VIADUCT REPLACEMENT

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INTRODUCTION AND SUMMARY

The City of Seattle, State of Washington Department of Transportation, and Federal Highway Administration are conducting studies for the Alaskan Way Viaduct and Seawall Replacement Project. The existing viaduct and seawall are both vulnerable to earthquakes. The study efforts to date have considered a range of alternatives from no action to rebuilding the existing structure to replacing it with a tunnel. The tunnel has been identified as the preferred option. The tunnel alternative creates economic benefits related to reduced traffic congestion (relative to a no-build alternative), an enhanced waterfront, increased visitor activity, and increased property values. The Seattle City Council requested a preliminary study to identify a framework for assessing these benefits and how they can be used for making decisions. This paper documents the results of that study, prepared by Property Counselors.

The scope of the analysis included three tasks:

1. Review of Similar Projects in Other Communities.
2. Review of Existing Studies.
3. Interviews with Local Stakeholders.
4. Identification of Economic Framework.

This paper is organized in six sections:

Introduction and Summary

Description of Project Alternatives

Experience Elsewhere

Elements of Economic Impact

Uses of Results

Next Steps

The major findings and conclusions are summarized in the remainder of this section.

1. Both the Rebuild Alternative and the Tunnel Alternative would preserve important transportation capacity for north-south passenger and freight travel, and local and regional access to the Downtown and Waterfront.

2. Other cities have removed elevated roadway structures in the past 30 years. Many of those were spur roads that were replaced with surface streets (e.g., San Francisco Embarcadero, Portland Harbor Drive, Milwaukee Park East Freeway). Other cities have replaced major highways with tunnels (Boston Central Artery) or elevated structures relocated away from Downtown Waterfront (I-195 Providence). In each case, the enhancement of downtown areas and their waterfronts were cited as important economic benefits with property value increases as the measure of impact.

3. An economic benefit assessment prepared as part of the Alaskan Way Viaduct Replacement Project identified the following estimates of benefits and costs.

	Benefit	Cost	Net Benefit
Rebuild Viaduct	$5.4 billion (reduced congestion over 40 years)	$2.7 to $3.1 billion	$2.3 to $2.7 billion
Tunnel	$6.8 to $8.4 billion. (Reduced congestion and other benefits)	$3.4 to $4.1 billion	$3.4 to $4.3 billion
Tunnel Increment	$1.4 to $3.0 billion (enhanced waterfront, visitor spending, property values)	$0.7 to $1.0 billion	$0.7 to $2.0

Source: Alaskan Way Viaduct and Seawall Replacement Project. Economic Analysis of Project Benefits.

This analysis was intended to provide order of magnitude estimates. More detailed analysis would provide improved estimates.

4. There are two broad decisions that can be informed by the benefit analysis.

- Whether to proceed with investment in the project (go – no go).

- How to allocate the cost of the project among potential funding sources (beneficiaries).

There appears to be general consensus that the viaduct needs to be replaced and its capacity maintained. The appropriate investment decision is whether to make the additional investment in the tunnel. That decision will largely depend upon whether funding is available. Accordingly, the key issue becomes: what benefits can be captured as sources of funding for the project?

5. The ultimate analysis needed to address the funding source question is a special benefit study that quantifies benefits, allocates them among classes of beneficiaries and identifies a formula for assessing a portion of the cost.

6. Such a study should be initiated after preliminary discussions among project partners, and among representatives of beneficiaries to reach consensus that this is the appropriate way to proceed.

PROJECT DESCRIPTION

There are two alternatives proposed for replacing the existing viaduct.

- Replacement Elevated Structure

- Tunnel

The tunnel alternative would also incorporate a new seawall in the design. The Tunnel Alternative is the preferred alternative identified in the planning study, Alaskan Way Viaduct and Seawall Replacement Study, by the City of Seattle, the Washington State Department of Transportation, and the Federal Highway Administration.

The six lane tunnel would begin south of King Street and continue under the central Waterfront to Pike Street. It will emerge at that point and connect by a new elevated structure to the existing Battery Street tunnel. The new tunnel would be approximately one mile long. The western portion of the tunnel would form a new seawall. The existing Alaskan Way surface street will be improved. The land under the existing viaduct will become open space.

The area above the tunnel is being considered as part of the City's Central Waterfront planning process. At this time, the City has developed a draft concept plan, showing ideas for an alternative waterfront plan. Key elements of the draft concept plan are:

Possible open spaces

Possible connections along the waterfront and to Downtown

Possible development opportunities on public and private parcels

One potential connection element is a lid for the new elevated station to link the Pike Place Market and the waterfront. The development opportunities identified at this time do not include the public land under the existing structure. The tunnel would not be designed to support dwelling units above it. Development opportunities would occur on adjacent sites enjoying improved access and views. It may be worthwhile to reconsider this assumption, in order to accommodate some pedestrian oriented commercial uses within the corridor.

There are a variety of other elements that could be included in plans for the Waterfront. For example, the Discovery Institute has proposed a series of transportation facilities (midtown transit hub at University and Park Station at Pier 70) and pedestrian corridors (Seneca Street Living Bridge and University Street Art Corridor).

The current estimate for a construction schedule calls for beginning of construction in 2009, with completion in 2016. Construction would be phased to reduce impact whenever possible.

Overall, the preferred alternative is expected the meet the following objectives:

- Preserves capacity for a corridor that is vital to our transportation network and for the region's economy.

- Provides an essential alternative to I-5 for people and goods moving through Seattle.

- Creates a two for one solution: The tunnel's west wall serves as a replacement for the crumbling seawall.

- Provides connections for West Seattle, Ballard/Interbay and Magnolia and other neighborhoods.

- Seizes an opportunity to remove a noisy barrier and re-connect Seattle to its waterfront.

- Vastly improves the waterfront as a regional destination.

- Improves the vitality of Seattle's Downtown and nearby neighborhoods, encouraging close-in living.

- Provides a unique opportunity for bicycle lanes and pedestrian promenades.

- Improves the water quality of Elliott Bay.

EXPERIENCE ELSEWHERE

Replacement of an elevated freeway structure in downtown cities has occurred with increasing frequency in recent years. The engineering solutions fall into two broad categories: replacement with surface boulevards or relocated and/or tunnel structures. The economic justification or transportation benefits differ between the two categories.

SURFACE BOULEVARDS

The most frequently cited instances of removal of elevated freeway structures are in Portland Oregon (Harbor Drive) and San Francisco (Embarcadero). There are two recent examples as well: Park East Freeway in Milwaukee Wisconsin, and the Central Freeway/Octavia Boulevard in San Francisco.

Harbor Drive, Portland. Harbor Drive was built along the Willamette River in Downtown Portland in the 1940s, separating the downtown from the River. The Eastbank Freeway (I-5) was completed in the 1960s, and Harbor Drive was demolished in 1974 and replaced by a riverfront park. In addition to freeing up the highway right-of-way, the project made new development sites accessible along the river. The Portland Development Commission assembled and improved the 73 acre Riverplace site on the South Waterfront. The City reports that the larger 309 acre Downtown Waterfront area increased in value at an average annual rate of 10.4 percent over the period 1974 to 2004. The mayor of Portland at the time argued that the quality of life and property values would improve in Downtown Portland as a result of the project.

Embarcadero, San Francisco. The Embarcadero was an elevated freeway extending one mile along the San Francisco Bay Waterfront. Originally intended to be part of a larger system connecting the Bay Bridge and Golden Gate Bridge, the project was halted by citizen opposition and the Embarcadero eventually served as an extended on-ramp. When the structure was damaged in an earthquake in 1989, the City moved to tear down the structure and replace it with a surface boulevard.

A 2½ mile promenade now stretches from Fisherman's Terminal to China Basin south of the Bay Bridge. In addition to providing access to the waterfront, removal of the structure has been the catalyst for reinvestment along the waterfront including the SBC Park, home of the San Francisco Giants, the Ferry Terminal with new shops and restaurants, Port of San Francisco offices at Pier 1, and various private developments. The San Francisco Redevelopment Agency has designated several redevelopment areas along the waterfront. It is estimated that property values along the corridor increased by 300 percent when the structure was removed.

Park East Freeway, Milwaukee, Wisconsin. Park East was a one-half mile spur road, providing access to I-43. Originally intended to be part of a ring road, the project was halted by public opposition. Park East crossed the Milwaukee River and

separated portions of Downtown. Faced with the prospect of an expensive rebuilding project, the City decided to replace the elevated structure with a surface street grid.

The City began demolition in 2000, with completion in 2004. The project will create 20 acres of Downtown land, and attract $300 million in private real estate investment. The project was expected to enhance the already popular Milwaukee Riverwalk and stimulate additional downtown housing. The City has solicited development proposals for several development sites and has received strong response.

Central Freeway/Octavia Boulevard, San Francisco. The Central Freeway was another link in the San Francisco freeway system, and was also halted before it was completed in the 1960s. The left-over stub extended five blocks and served as an extended off-ramp. After much debate between the City and State, it was agreed to replace the five block section with Octavia Boulevard. The project was initiated in 2002 and is scheduled for completion in 2006. The Boulevard will have four through lanes, a left turn lane, a landscaped median, and bike lanes. Street ends and unused rights-of-way will be available for redevelopment.

There are two common themes to these experiences. First, the traffic capacity of the structures was no longer necessary, either because they never filled the roles they were originally designed for, or new facilities elsewhere provided the necessary capacity. Second, without the pressing transportation need, the major arguments guiding investment involved quality of life and property values.

RELOCATED AND/OR TUNNEL STRUCTURES

There are other instances where major highway structures were relocated or placed in tunnels. Recent and current examples include the Big Dig in Boston and the I-195 freeway in Providence, Rhode Island.

Central Artery Tunnel, Boston. The project known as the Big Dig is considered the most expensive public works project in history. The project involves replacing the six lane elevated Central Artery with an 8 to 10 lane underground expressway and extension of I-90 through a tunnel to Logan Airport. The Central Artery was considered to be one of the most congested highway links in the country. The solution to the problem involves 1.8 miles of highway, with construction beginning in 1992 and scheduled for completion this year. The project was proposed as a transportation solution. However, the open spaces created by the project will have significant economic impact as well. A study conducted by students at Tufts University estimated that the open spaces will increase property values by $1 billion. The analysis was based on computed relationships between distance from parks and highways. The study acknowledged that there was additional economic benefits to related to tourism and uses of the green spaces.

East Providence Expressway, Providence, Rhode Island. The relocation of the East Providence Expressway (I-195) through Downtown Providence is another

element in the renaissance of this industrial New England city. The new highway will replace an existing viaduct through Downtown Providence with a new corridor approximately one-half mile south of the original alignment. Highway improvements were necessary for highway safety, but the selected alignment was most compatible with the City's Old Harbor Plan, providing waterfront access to the Providence River, increased park land and development sites. The project is scheduled for completion in 2007. The City has made earlier efforts to connect to the river. The City realigned the river to its original course, created a riverwalk with bridges, pedestrian pathways and parks, including Waterplace, with a lake and amphitheater. The enhanced Downtown attracted a major upscale mall, completed in 1999, and over one billion dollars in new investment. Providence's reconnection to the water was the central element in the economic resurgence of Downtown.

Both of these cities had critical transportation links that required investment. The transportation requirements were the primary drivers in the investment decisions, but there were clear economic benefits associated with the improvement of quality of life and development conditions in each city.

ELEMENTS OF ECONOMIC IMPACT

The preferred alternative for the Viaduct and Seawall will provide economic benefits, as suggested by the project description and experience in other cities. The categories of economic impact are considered in this section as a basis for identifying an analytical framework for quantifying the benefits for decision making. Economic benefits have been identified as part of the planning work conducted for the project. The results of the existing study are presented here, followed by a further discussion of benefits. A list of people contacted during the study is included in an appendix.

ECONOMIC STUDIES TO DATE

Berk and Associates has evaluated economic benefits for the Alaskan Way Viaduct and Seawall Replacement Project. The analysis was conducted in three parts:

Transportation Benefits – A comparison of the cost of congestion and delay, to the cost of rebuilding the viaduct.

Tunnel Benefits – a comparison of the local and regional benefits of the tunnel, to the additional investment required beyond rebuilding the viaduct.

Seawall Benefits – a comparison of the costs to the Northwest and national economy of a seawall failure, to the cost of replacing the seawall.

The results of the first two parts have been published in two four-page folios, in December 2004 and March 2005.

TRANSPORTATION BENEFITS

If the Viaduct were not replaced, and the capacity were not available, traffic would shift to I-5 and surface streets and lead to additional congestion.

- Traffic models were used to estimate that increased congestion would result in 10.4 million person hours of delay annually, even with reinvestment in transit and local arterials.

- The cost of that delay is estimated using average wages adjusted for non-commercial and commercial trips.

- Annual impacts are converted to a lump sum cost using a real (inflation adjusted) discount rate of 3.5 percent:

  20 years: $3.3 billion

  30 years: $4.4 billion

  40 years: $5.4 billion

  The cost of congestion exceeds the transportation capacity portion of the total cost of the rebuild alternative ($2.0 to $2.3 billion) or the tunnel alternative ($2.7 to $3.1 billion). The analysis does not include the cost of increased vehicle emissions, fuel costs, or safety costs.

TUNNEL BENEFITS

The analysis identifies the qualitative benefits of the tunnel alternative versus the rebuild alternative as:

- Less noise, fewer access barriers, better views.

- Greater desire to live, work, recreate and visit the area.

- Connections between the waterfront and downtown.

- Enhanced open space and pedestrian environment.

These improvements would support the following estimated benefits over 25 years:

Enhanced Value	$0.7 – $1.0 billion	20 to 30 million local visits at $2 per visit.
New Visitor Spending	$0.5 - $1.0 billion	0.5 to 1.0 percent increase in annual visitors at $633 per visitor.
Increased Property Values	$0.3 - $1.0 billion	Adjacent Properties: $40 - $120 million Neighborhood: $120 to $240 million Other DT: $120 - $600 million

Source: Alaskan Way Viaduct and Seawall Replacement Project. Economic Analysis of Benefits.

This analysis is intended to provide order of magnitude estimates. More detailed analysis would provide improved estimates.

TRANSPORTATION IMPACTS

As noted in the Berk analysis, if the Viaduct failed or were removed and not replaced, the traffic would be displaced to surface streets and I-5. The cost of that congestion includes the elements identified in the Berk analysis:

Cost of Delay

Vehicle Emissions

Fuel Costs

Safety Costs

These costs would have to be absorbed by businesses and consumers in the region. The costs would eventually reach a point, however, where businesses and consumers won't absorb the costs.

- Freight originating or destined outside the region might be directed through other cities.
- Businesses may choose other locations for their production and distribution facilities.
- Residents and workers may choose other locations to live and work.

The loss of economic activity resulting from these decisions may exceed the costs of delay, emissions, fuel and safety.

VISITOR INDUSTRY IMPACTS

An improved waterfront environment under the tunnel environment will certainly enhance the City's attractiveness for visitors. Several of the City's popular visitor attractions are or will be located in this area.

Seattle Aquarium (to be expanded)

Seattle Art Museum Sculpture Garden (to be developed by 2010)

Cruise Ship Terminal

Washington State Ferry Terminal

Victoria Clipper

Argosy Cruises

Odyssey, The Marine Discovery Center

Bell Harbor Marina

Other attractions are within easy walking distance of the waterfront.

Pike Place Market

Seattle Center

Qwest Field and Safeco Field

These attractions draw between 20 to 30 million users per year, including 10 to 12 million ferry users, 8 to 10 million Pike Place Market visitors, and 640,000 aquarium visitors.

The growth in cruise ship visits from six in 1999 to 149 in 2004, is another indication of the attraction of the waterfront.

The Seattle Convention and Visitors Bureau estimated that there were 8.5 million overnight visitors to King County in 2003, spending 4.6 nights each, and $205 per day. Forty-five percent of visitors identify the purpose of the trip as visiting friends and relatives; 34 percent for pleasure or vacation; and 8 percent for business. The estimated distribution of expenditures was:

Food and Beverage	31%
Lodging	21
Shopping	24
Ground Transportation	9
Recreation/Entertainment	8
Grocery and Convenience	6
Total	100%

The impact of visitor spending is significant and widely distributed throughout the economy.

The relationship between future visitor volumes and waterfront attractions requires additional analysis. But the data potentially available on overall visitor levels and characteristics at specific waterfront activates should provide the basis for a realistic estimate of additional visitor spending attributable to an enhanced waterfront under the tunnel alternative.

NATURAL, CULTURAL AMENITIES

A variety of natural and cultural amenities combine to make Seattle an attractive place to live and work. The natural amenities include the waterfront and the mountains. Cultural amenities include museums; music, dance and drama performances; and spectator sports. Recent studies have identified these amenities as being key factors in attracting the information-based sectors that provide the strongest future opportunities for economic growth. While the relationships between any particular amenity and economic growth is difficult to isolate, the general relationship is intuitively clear.

The Berk analysis estimated the value of an enhanced waterfront according to a value attributable to each incident of use. It is possible that the amount of economic activity attracted to the community as a result of the collective amenities exceeds the estimated amount calculated by Berk.

PROPERTY VALUE IMPACTS

As noted in the discussion of the experience in other communities, increases in property values are frequently cited as benefits of removing elevated transportation structures. Property value increases were reported in the communities considered. In a static situation, increases in property values in one area could be offset by decreases elsewhere, as only the relative desirability of properties change. In a dynamic situation with growth in employment and population, the aggregate value is not fixed. Further, if the growth is in turn related to the amenities affecting property values, it is valid to consider the property value increases as net benefits to the economy as a whole.

The basis for estimating property value increases must address several factors.

- The properties immediately adjacent to the road right of way will probably experience increases in value as a result of their redevelopment potential rather than an increase in the value of existing improvements. An analysis must consider the highest and best use comparing the value of the underlying land as if vacant to the value of existing improvements. The results of the analysis will be affected by proposed changes in height limits in this part of Downtown.

- Newer structures adjacent to the right of way will likely command higher rents, which in turn supports a higher valued income stream.

- Properties with improved views will likely also command higher rents for certain floors and view corridors.

- Properties in the greater Downtown may enjoy property value increases resulting from an increasingly attractive Downtown. This effect is difficult to isolate.

VALUE OF DEVELOPMENT SITES

The creation of development sites with special characteristics might have greater economic impact if it allows the City to attract a business or activity that wouldn't otherwise consider the area. This might be true for a company that required a site of a certain size, with specific adjacency requirements or amenities. In this case, the development opportunities identified to date will be attractive, but not so distinctive as to accommodate a user that otherwise wouldn't come. The property value increases associated with possible sites will reflect the value of these sites.

CONSTRUCTION IMPACTS

The estimated construction period for the preferred alternative is seven to eight years. This has two important implications:

1. Many of the economic benefits will not be realized for several years.

2. Business or property owners near the waterfront may experience adverse business impacts for an extended period.

Any benefit analysis must account for the timing of benefits and costs. Further, the costs to business during construction must be reflected as well.

MEASURES OF IMPACT

The impacts identified in each of the categories described above can be summarized in terms of:

Gross Business Receipts

Personal Income

Jobs

State and Local Tax Revenue

USES AND RESULTS OF THIS BENEFIT ANALYSIS

There are two broad uses for an economic benefit analysis of this type:

- To support an investment decision to proceed with a project.

- To allocate project costs among various potential funding sources.

Each is described below.

Decision to Proceed With Project. The project partners – the City, State, and Federal government – can decide to proceed with the project if the aggregate benefits exceed the cost. The analyses to date indicate that the transportation benefits exceed the cost of the Rebuild Alternative. The No Action Alternative and the alternative of replacing the viaduct with a surface street have been eliminated from further consideration. While further analysis of the transportation benefits may strengthen the support behind the decision to eliminate those alternatives, it is unlikely to change the decision. Any further analysis should focus on whether to proceed with the Rebuild or Tunnel alternatives.

The decision to proceed with the Tunnel Alternative could be justified on the basis that aggregate benefits of the features unique to that alternative, exceed the incremental cost beyond the cost of rebuilding an elevated structure. The preliminary benefit estimates appear to support such an approach. It is likely, however, that the decision on the tunnel rather than the rebuild alternative will be determined by the availability of funding. The ability to attract funding from specific sources based on a demonstration of benefits to those sources, will likely drive the decision.

Allocation of Cost Among Funding Sources. A portion of the estimated benefits can be captured as a source of funding for the project. For example,

- The increased property values can support a local improvement district assessment.

- Increased revenues to visitor-related businesses can support a business assessment.

- Increased tax revenues of all types can support debt service payments (a form of tax increment financing).

- Economic benefits widely distributed among residents (e.g., enhanced waterfront congestion or reduced delays due to congestion) can provide justification for general obligation debt.

A quantification of the economic benefits can provide a supportable funding plan for the project. Such a plan is probably the most important potential use of the benefit analysis.

NEXT STEPS

1. The City and project partners need to agree that the project-related benefits should be captured as a source of funding.

2. The City should initiate discussion of representatives of major benefiting categories to identify parameters for potential funding tools.

3. Solicit proposals for a benefit study for the purpose of:

   - Quantifying economic benefits to property owners, businesses, taxing jurisdictions, and residents.

   - Identifying formula for allocating benefits within and among categories of benefiting parties.

   - Identifying the supportable level of assessments to categories of benefit parties.

   The study should be conducted in three parts:

   a. Detailed analysis of economic benefits

   b. Preliminary investigation identifying preliminary assessments

   c. Final benefit study with the final assessed rate

4. Secure necessary approvals of assessments.

APPENDIX

CONTACT LIST

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Richard Ford	Alaskan Way Viaduct and Seawall Coalition
Michael Hodgins	Berk and Associates
Gerry Johnson	Preston Gates and Ellis
Kate Joncas	Downtown Seattle Association
William Justen	Samis Land Company
Dennis Meyer	Seattle Department of Planning and Development
John Okamoto	Port of Seattle
Denny Oslow	Harbor Properties
John Rahaim	Seattle Department of Planning and Development
Guillermo Ramano	Seattle Department of Planning and Development
Chris Rogers	Seattle Art Museum
Frank Stagen	Nitze-Stagen
Catherine Stanford	Pike Place Market Preservation and Development Authority
Maureen Sullivan	Washington Department of Transportation
Evelyn Yensen	Seattle Convention and Visitors Bureau